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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/560,099	01/29/2007	Christine Rademacher	P02074US2A	9529

7590 03/24/2009  
Bridgestone Americas Holding Inc  
Chief Intellectual Property Counsel  
1200 Firestone Parkway  
Akron, OH 44317-0001

EXAMINER
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BOYLE, ROBERT C

ART UNIT	PAPER NUMBER
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1796

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03/24/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/560,099	<b>Applicant(s)</b> RADEMACHER ET AL.	
	<b>Examiner</b> ROBERT C. BOYLE	<b>Art Unit</b> 1796	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 20 August 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 13-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-20 are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>08/20/2007</u> .  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claim(s) 1-12, drawn to a method for preparing a functionalized polymer.

Group II, claim(s) 13-19, drawn to a functionalized polymer.

Group III, claim(s) 20, drawn to a vulcanate.

2. The inventions listed as Groups I-III do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the common technical feature of an polymer with a end-cap of a isocyanato alkoxysilane derivative or isothiocyanato alkoxysilane derivative is found in the prior art, see Ozawa et al., WO 01/34658 (abstract; page 2, line 23-page 5, line 24; page 7, lines 24-32; page 8, line 1-page 9, line 19; page 14, lines 1-30). The common technical feature does not amount to a special technical feature; therefore there is a lack of unity.

3. During a telephone conversation with ARTHUR REGINELLI on March 19, 2009 a provisional election was made WITH traverse to prosecute the invention of Invention I, claims 1-12. Affirmation of this election must be made by applicant in replying to this

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Office action. Claims 13-20 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

4. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 4 recites the limitation "vulcanizate of claim 2" in the first line of the claim. Not only is there is insufficient antecedent basis for this limitation in the claim, it is also problematic in that claim 4 refers to different features in two different claims thereby causing confusion in scope .

### ***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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7. Claims 1-3 and 11-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Ozawa et al., PCT Publication WO 01/34658.

8. As to claims 1-3, 11-12, Ozawa teaches adding isocyanate siloxanes and isothiocyanate siloxanes, such as 3-isocyanatopropyltrimethoxysilane, to anionic living polymers which contain styrene/butadiene (abstract; page 2, line 23-page 5, line 24; page 7, lines 24-32; page 8, line 1-page 9, line 19; page 14, lines 1-30; page 17, lines 1-4; page 18, lines 1-14; page 19, lines 20-25; page 30, lines 1-30; page 32).

### ***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ozawa. The discussion with respect to Ozawa as set forth in paragraphs 8-9 above is incorporated here by reference.

10. As to claim 5, Ozawa teaches adding isocyanate siloxanes and isothiocyanate siloxanes to anionic living polymers where the ratio of functionalizing agent to initiator is 0.1-150 to 1 (abstract; page 2, line 23-page 5, line 24; page 7, lines 24-32; page 8, line 1-page 9, line 19; page 14, lines 1-30; page 17, lines 1-4; page 18, lines 1-14; page 19, lines 20-25; page 30, lines 1-30; page 32). The range of functionalizing agent to initiator taught by Ozawa, 0.1-150 to 1, overlaps with the claimed range, 0.3-1 to 1. It is well

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settled that where prior art describes the components of a claimed compound or compositions in concentrations within or overlapping the claimed concentrations a prima facie case of obviousness is established. See MPEP 2144.05; *In re Harris*, 409, F.3d 1339, 1343, 74 USPQ2d 1951, 1953 (Fed. Cir 2005); *In re Peterson*, 315 F.3d 1325, 1329, 65 USPQ 3d 1379, 1382 (Fed. Cir 1997); *In re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936-37 (CCPA 1990); *In re Malagari*, 499 F.2d 1297, 1303, 182 USPQ 549, 553 (CCPA 1974).

11. Claims 4 and 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ozawa in view of Hergenrother et al., EP 0 801 078. The discussion with respect to Ozawa as set forth in paragraphs 8-11 above is incorporated here by reference.

12. As to claims 4 and 6-7, Ozawa teaches adding isocyanate siloxanes and isothiocyanate siloxanes to anionic living polymers where the ratio of functionalizing agent to initiator is 0.1-150 to 1 (abstract; page 2, line 23-page 5, line 24; page 7, lines 24-32; page 8, line 1-page 9, line 19; page 14, lines 1-30; page 17, lines 1-4; page 18, lines 1-14; page 19, lines 20-25; page 30, lines 1-30; page 32). Ozawa does not teach using a lithium initiator.

13. Hergenrother teaches adding siloxane compounds to anionic living polymers of styrene/butadiene where the polymer initiator is an organolithium compound such as butyl-lithium in the presence of THF and triethylamine (abstract; page 2, lines 36-59; page 3, lines 1-49; page 4, lines 1-17; page 8, lines 1-35). Triethylamine and THF are polar coordinators as defined by the instant specification, see paragraph 0022.

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14. It would have been obvious to one of ordinary skill in the art to use the lithium initiators of Hergenrother with the polymerization of Ozawa because both use styrene/butadiene rubbers for the tire industry and lithium initiators are well known in the art to polymerize dienes via anionic living polymerization (Hergenrother: page 2, lines 10-16, 55-59).

15. As to claims 8-9, Hergenrother teaches SBR polymers with 0-80 wt% styrene, specifically 35.7 wt%, and with 24.5 % vinyl configuration (abstract; page 2, lines 36-59; page 3, lines 1-49; page 4, lines 1-17; page 8, lines 1-35).

16. As to claim 10, it is the examiner's position that the cis/trans ratio is a result effective variable because changing it will clearly affect the type of product obtained. See MPEP 2144.05(B). Case law holds that "discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art." See *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). In view of this, it would have been obvious to one of ordinary skill in the art to utilize the cis/trans ratio within the scope of the present claims so as to produce desired end results.

17. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ozawa and Hergenrother et al., EP 0 801 078 in view of Vitus et al., U.S. Patent 4,409,368. The discussion with respect to Ozawa and Hergenrother as set forth in paragraphs 8-17 above is incorporated here by reference.

18. Ozawa and Hergenrother teach the reaction of isocyanato alkoxysilanes with anionically polymerized living polymers (see paragraphs 8-17 above).

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19. Vitus teaches the formation of polymers of butadiene using anionic living polymerization using alkyl lithium initiators and polar coordinators where the polybutadiene has a relative ratio of cis to trans of 25.3 cis to 40.3% trans which corresponds to the claimed 3:5 ratio (abstract; column 1, line 50-column 2, line 33; column 3, lines 6-35; column 10, lines 1-52). It would have been obvious to one of ordinary skill in the art to use the method of Vitus to achieve the claimed ratios because Vitus teaches hard vulcanized rubbers which are formed from anionic living polymerization which can be terminated by addition of a terminating agent (column 4, lines 27-43, 59-65) and Vitus teaches forming star polymers which would allow the ability to add more end-groups on each polymer, thus giving more functionality to each polymer.



***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERT C. BOYLE whose telephone number is (571)270-7347. The examiner can normally be reached on Monday-Friday, 9:00AM-5:00PM Eastern.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (571)272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/R. C. B./  
Examiner, Art Unit 1796

/Vasu Jagannathan/  
Supervisory Patent Examiner, Art Unit 1796